AMENDMENTS TO THE CLAIMS

Please amend the claims as follows.

1. (Currently Amended) A miniature confocal optical head for a confocal imaging system, or for an endoscopic confocal imaging system, said head comprising:

   a point source for producing an excitation beam;

   an optical system comprising a first optical device and a second optical device capable of causing said excitation beam to converge at an excitation point situated in a subsurface plane in a specimen, said plane being perpendicular to an optical axis of the optical head, wherein the optical head has a diameter less than or equal to 3 mm and a length of approximately 30 mm; and

   a scanning mechanism for scanning said excitation point so as to describe a field of view on the order of 150 x 150 mic in said subsurface plane in two perpendicular scanning directions, wherein the scanning mechanism comprises a rapid line scanning device and a slow column scanning device,

   wherein at least one of the rapid line scanning device and the slow column scanning device comprises a micro-electro-mechanical system (MEMS) capable of moving at least one of the first optical device and the second optical device in a direction perpendicular to said optical axis.

2. (Previously Presented) The optical head according to claim 1, wherein the slow column scanning device operates at a frequency of about 10 to 15 Hz and the rapid line scanning device operates at a frequency of about 4 kHz, so as to produce an image in real time.

3. (Previously Presented) The optical head according to claim 1, wherein the MEMS is capable of cooperating with the first optical device or the second optical device in a diametrically opposite manner and alternately.

4. (Previously Presented) The optical head according to claim 1, wherein the excitation beam produced by the point source is divergent, the first optical device is capable of transforming said divergent beam into a parallel or slightly divergent beam and the second optical device is capable of forming the subsurface focusing point.

5. (Previously Presented) The optical head according to claim 4, wherein the first optical device is mobile, capable of carrying out optical beam slow column scanning.

6. (Previously Presented) The optical head according to claim 1, wherein the first and second optical devices are mobile, each capable of being moved in a direction perpendicular to the optical axis so that each defines a scanning direction.

7. (Previously Presented) The optical head according to claim 1, wherein the point source is mobile, fixed to a piezoelectric device capable of moving the excitation beam emitted by said point source with a displacement chosen so as to define a second scanning direction.

8. (Previously Presented) The optical head according to claim 7, wherein the second scanning direction and characteristics of the piezoelectric device correspond to rapid line scanning.

9. (Previously Presented) The optical head according to claim 8, wherein the piezoelectric device comprises a bimorphic piezoelectric positioner extending along the optical axis of the head, said point source being fixed on one face of said positioner at a front end of the positioner facing the first and second optical devices.

10. (Previously Presented) The optical head according to claim 1, further comprising a device for modifying a depth of the subsurface plane in the specimen.

11. (Previously Presented) The optical head according to claim 10, wherein the device for modifying the depth of the subsurface plane in the specimen comprises an MEMS capable of moving the second optical device along the optical axis of the optical head.

12. (Previously Presented) The optical head according to claim 11, wherein the MEMS is capable of moving the second optical device in order to carry out a movement along an optical axis of the excitation beam.

13. (Previously Presented) The optical head according to claim 10, wherein the device for modifying the depth of the subsurface plane comprise a device adapted for modifying a radius of curvature of one of the first and second optical devices.

14. (Currently Amended) The optical head according to claim 1, wherein the point source comprises an optical fibre capable of guiding an excitation signal from an external source, wherein an emergent beam from the optical fibre constitutes the excitation beam, wherein the optical fibre is used to bring the optical head within a distance of several tens of microns from the field of view.

15. (Previously Presented) The optical head according to claim 14, wherein the optical fibre is single-mode with a core diameter adapted to allow spatial filtering of a return signal and therefore ensuring the confocality of the optical head, with maximized numerical aperture.

16. (Previously Presented) The optical head according to claim 1, wherein the point source is of Vertical-Cavity Semiconductor Emitting Laser (VCSEL) type, having a numerical aperture and a cavity outlet diameter compatible with a confocal system, and associated with a detector placed behind a cavity of the VCSEL.

17. (Previously Presented) The optical head according to claim 1, further comprising a light window at an outlet of the optical head intended to come into contact with the specimen and in order to carry out an index matching.

18. (Previously Presented) The optical head according to claim 17, wherein the light window has a refractive power function on a focused optical beam.

19. (Previously Presented) The optical head according to claim 1, wherein the optical system comprising the first and second optical devices has a numerical aperture at least equal to a numerical aperture of the point source.

20. (Previously Presented) A confocal imaging system comprising:

the optical head of claim 1;

a detector configured to detect an emitted signal; and

an electronic and data processing unit configured for controlling system operation and for processing detected signals and reconstructing a confocal image of an imaged field.

21. (Previously Presented) The system according to claim 20, wherein the point source comprises a first optical fibre linked to a laser source and a coupling device for coupling said first optical fibre to a second optical fibre for conveying to and from the optical head and a third optical fibre for conveying the emitted signal to the detector.

22. (Previously Presented) The system according to claim 20, wherein the optical head comprises a VCSEL source and an integral detector, the system comprises a flexible linking device between the optical head and the electronic and data processing unit.